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100TH ANNIVERSARY OF VITTHALBHAI PATEL AS FIRST INDIAN SPEAKER

Context

- All India Speakers' Conference held in New Delhi, marking the 100th anniversary of Vitthalbhai Patel's election as the **first Indian Speaker of the Central Legislative Assembly.**

The Central Legislative Assembly (CLA)

- The Central Legislative Assembly (CLA) was the **lower house of the Indian Legislature** in British India, established by the **Government of India Act 1919** as part of the **Montagu-Chelmsford Reforms.**
  - The 1919 Act created a **two-house system:** the Central Legislative Assembly (lower house) and the Council of State (upper house).
  - The CLA was **constituted in 1921** following the 1920 elections.
- **Composition:** It had **145 members**, with 104 being elected and the remaining 41 nominated by the Governor-General.
- **Powers and Functions:** CLA could debate the budget and pass resolutions. The members could ask questions, introduce resolutions, and vote on demands for grants.
  - However, the Governor-General retained veto powers and could certify bills even without Assembly approval.
- **The CLA was dissolved** on August 14, 1947, with the establishment of India's independence and the formation of the Constituent Assembly.

About Vitthalbhai Patel

- **Contribution as Speaker (1925–1930):** In 1925, he became the first Indian to be elected as President (Speaker) of the Central Legislative Assembly.
  - He asserted the **independence of the legislature from the executive**, laying the foundations for parliamentary autonomy.
  - He created the **Legislative Department,** an innovation that was later accepted by the Constituent Assembly and continues under presiding officers in both Parliament and State legislatures.
- **Climbing the Political Ladder:** He won a seat in the **Bombay Legislative Council (1912)** after securing eligibility through property ownership.
  - Advocated **free and compulsory elementary education (1917)** for Bombay Presidency—though the Bill was never implemented, it reflected his reformist zeal.
  - Entered the **Imperial Legislative Assembly in 1920,** where he became one of the most active members, posing 62 questions in a single session.
- **Differences with Gandhiji:** He disagreed with Mahatma Gandhi's suspension of the Non-Cooperation Movement in 1922.
  - He became a founding member of the **Swaraj Party (1923)**, a **"pro-changer" group** that believed in entering legislatures to expose colonial rule from within.

Legacy of Vitthalbhai Patel

- The office of the Speaker of Lok Sabha derives much of its institutional legacy from the President of the Central Legislative Assembly during colonial times.
- Thus, Vitthalbhai Patel is often seen as a **precursor to the modern Lok Sabha Speaker.**

All India Speakers' Conference 2025

- **Reaffirming the Role of the Speaker:** The Speaker is both a guardian of legislative dignity and a servant of democracy, tasked with ensuring impartiality.
- **Debate as the Soul of Democracy:** Without debate, legislatures risk becoming "lifeless buildings."
  - **Cited objectives of law-making:** welfare of people, inclusive development, efficiency, and national security.

Source: AIR

JAN VISHWAS 2.0

Context

- The **Jan Vishwas (Amendment of Provisions) Bill, 2025** was introduced in Lok Sabha.

Major Provisions

- **Decriminalising Offences:**
  - It seeks to amend **17 central Acts** to mainly decriminalise or rationalise certain offences and penalties.
  - These include the Motor Vehicles Act, 1988, the Legal Metrology Act, 2009, the Apprentices Act, 1961, and the New Delhi Municipal Council Act, 1994.

- **Revision of fines and penalties:** The Bill revises the monetary value of fines and penalties for several offences.
  - It further provides that fines and penalties specified by it will increase by 10% of the respective minimum amount every three years.
- **Removal of penalties for the first instance of an offence:** The Bill amends some Acts to provide for warnings in the first instance of an offence.
  - The Bill amends this to provide for issuance of a warning in case of the first offence, and levy of a monetary penalty for subsequent offences.
- **Adjudication of penalties:** The Bill amends certain Acts to provide for the appointment of adjudicating officers to hold inquiries and adjudicate penalties.

Need for the Amendment

- **More than 75% of all crimes** are defined under laws that regulate areas beyond core criminal justice, such as shipping, taxation, financial institutions, and municipal governance.
  - There are some inexplicably high punishments for seemingly routine offences.
  - While many such criminal provisions are rarely enforced, they may lead to the **arbitrary exercise of power by the state.**
- The excessive criminalisation further **burdens India's already burdened legal system.**

Significance

- The goal of Jan Vishwas is to create a **more business-friendly environment and promote ease of living** by eliminating unnecessary legal hurdles and simplifying the regulatory landscape.

Source: IE

INDIA'S UNIQUE DAIRYING MODEL AND ITS CHALLENGES

Context

- India's low-cost, cooperative-led dairying model ensures global price competitiveness, but its dependence on cheap labour and low productivity poses long-term sustainability challenges.

Dairy Sector of India

- **Global Leadership:** India is the **world's largest milk producer,** contributing **24.76%** of global milk output.
- **Production Growth:** Milk production rose from 146.31 million tonnes in 2014-15 to **239.30 million tonnes** in 2023-24.
- **Economic Contribution:** Dairy is India's single largest agricultural commodity, contributing **5% to GDP** and employing over 8 crore farmers.
- **Growth Performance:** Livestock sector grew at a CAGR of 7.9% (2014-15 to 2020-21), outpacing the agriculture sector.
- **Per Capita Availability:** Rose to **471 g/day in 2023–24**, substantially above the world average of 322 g/day.
- **Top Producing states:** Uttar Pradesh, Rajasthan, and Madhya Pradesh.

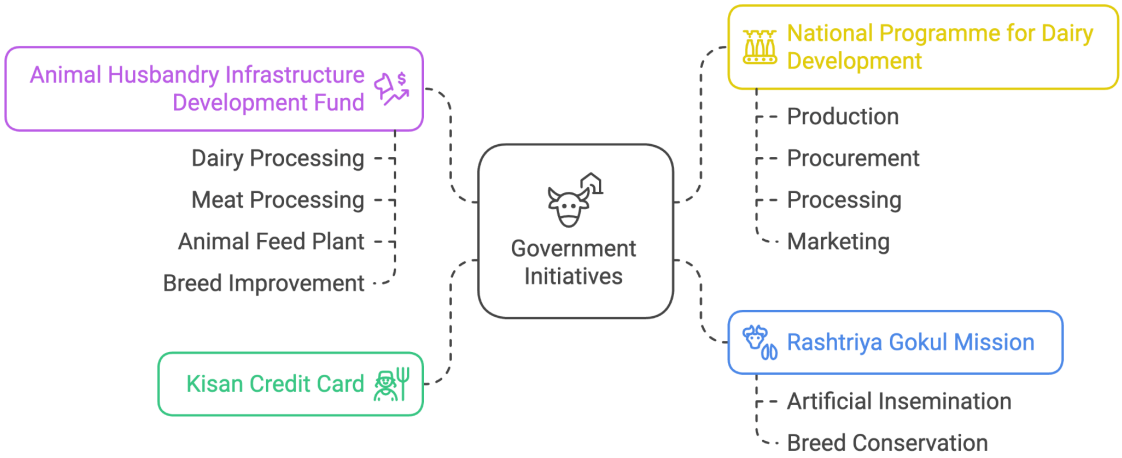
Structural Weaknesses in Indian Dairying

- **Breed Productivity Gaps:** Yields still lag behind advanced dairy nations, especially among indigenous breeds.
  - **Average yield of Indian cows** is **1.64 tonnes/year** vs. 7.3 tonnes in EU and 11 tonnes in US.
- **Land & Fodder Constraints:** Unlike New Zealand, India lacks abundant pasture land.
  - Reliance on crop residues and purchased feed makes dairying costly.
- **Dependence on Cheap Labour:** Dairy sector has labour-intensive tasks such as feeding, milking, bathing cattle, cleaning sheds. The model survives on unpaid family labour with little opportunity cost.
  - Rising rural education and alternative jobs may make such labour unavailable.
- **Climate Impact & Market Volatility:** Extreme heat reduces yields and drives up prices.
- **Slowing Growth:** Production growth has slowed, from **~6%** in earlier years to 3.78% in 2023–24, with buffalo milk output declining **16%.**
- **Post-Harvest Losses:** Inadequate cold-chain and processing infrastructure cause wastage.

Significance

- **Economic Contribution:** India's dairy is the single largest agricultural commodity, contributing **5 percent** to the national economy and directly employing more than 8 crore farmers.
- **Nutritional Security:** Milk is a major source of protein, calcium, and vitamins, improving dietary diversity.
- **Export Potential:** India is emerging as a supplier of dairy products like skimmed milk powder, butter, and ghee to Asia and Africa.
- **Women's Participation: 35%** of members in dairy cooperatives are women, highlighting the sector's role in gender-inclusive growth.

Government Initiatives for Livestock and Dairy Development



Way Ahead

- **Boost Productivity:** Intensify breed improvement (AI, IVF, indigenous genetics), nutrition reforms.
- **Strengthen Infrastructure:** Develop cold chains, chilling centres, and organized collection systems.
- **Expand Cooperative Reach:** Bring more farmers into organized frameworks; local-level cooperatives can cut inefficiencies.
- **Risk Mitigation:** Promote climate-resilient breeds, improve animal health (vaccination drives), and stable pricing frameworks.
- **Enhance Inclusivity:** Empower women through targeted interventions and enhanced participation.

Source: IE

CRUISE TOURISM IN INDIA

In Context

- India's cruise tourism is rapidly developing by leveraging its extensive rivers, coastlines, and ports to offer unique leisure and cultural experiences.

Cruise Tourism

- It offers nature-driven travel along rivers, seas, and canals, providing safe and inclusive access to diverse destinations while boosting connectivity and local economies through job creation.

Indian Scenario

- India is well-positioned for cruise tourism with its extensive infrastructure, including **12 major and 200 minor ports along a 7,500 km coastline**, over 20,000 km of navigable waterways connecting around **400 rivers, and numerous coastal states, union territories, and 1,300 islands.**
- From Kerala's backwaters to major rivers like the Ganga and Brahmaputra, cruise tourism is driving economic growth, creating jobs, and supporting local communities.

Importance of Cruise Tourism

- Cruise tourism has a market size of US $7.1 billion, and is projected to grow at a CAGR of 12.1% over the next 10 years.
- Cruise tourism **stimulates local economies** through port services, hospitality, retail, and cultural excursions.
- The cruise industry is generating jobs across various sectors — hospitality, aviation, agriculture, retail, entertainment, manufacturing, information services, and healthcare.
- **Cruises offer immersive experiences in India's heritage,** fostering global cultural exchange.
- River cruises **promote tourism in hinterland regions,** supporting inclusive growth.
- Development of cruise terminals and navigational aids enhances overall maritime capacity.

Challenges

- **Infrastructure Gaps:** Limited number of modern cruise terminals and inadequate last-mile connectivity.
- Complex clearance procedures and fragmented jurisdiction across agencies.
- **Monsoons and cyclonic risks** affect cruise schedules and safety.
- Domestic tourists **often lack exposure to cruise travel** as a leisure option.
- **Waste management and emissions** from cruise vessels require stringent oversight.

Steps Taken By the Indian Government to Boost Cruise Tourism

- In June 2025, the Ministry of Ports, Shipping & Waterways hosted the **first-ever ASEAN-India Cruise Dialogue in Chennai** to enhance India's cruise connectivity with a focus on heritage-led cruise tourism.
  - The ASEAN-India Cruise Dialogue was very significant. ASEAN countries have over 25 major seaports and a combined coastline of over 1,00,000 km.
- **The Cruise Bharat Mission** : It was launched in 2024, at Mumbai port, aims to double India's cruise passenger traffic to boost the country's cruise tourism industry by 2029.
  - The mission promotes a coordinated inter-ministerial approach involving agencies like Customs, Immigration, and State Tourism to streamline regulations and operations.
- **The Maritime India Vision 2030** aims to position India as a major player in the global ocean and river cruise market, with the potential for the cruise industry to grow eightfold in the next decade due to rising demand and incomes.

Conclusion and Way Forward

- Government initiatives like the Cruise Bharat Mission and Maritime India Vision 2030 are building a strong foundation to establish India as a global cruise destination.
- With improving infrastructure and rising awareness, cruise tourism is poised to become a key part of India's travel industry, attracting global travelers to explore the country.
- To compete globally, India must strengthen infrastructure, identify lucrative routes, improve regulations, and invest in quality operations.
- Although the ASEAN partnership is strategic, significant capacity building is required to fully realise India's cruise tourism potential.
  - Identifying lucrative cruise routes and creating an enabling regulatory environment will enhance state-of-the-art cruising experience for international travellers.

Source :TH

NO RIVERBED MINING NOD WITHOUT SAND REPLENISHMENT STUDY: SC

Context

- In a major decision aimed at curbing environmental damage from **sand mining,** the Supreme Court emphasized that **no approval can be granted** for **mining in a riverbed without a thorough scientific study.**

About

- The court described this **"replenishment study"** as a **mandatory requirement,** upholding a **National Green Tribunal (NGT) order** that had cancelled the environmental clearance for a mining project in Jammu and Kashmir.
  - It emphasised that the **District Survey Report** is essential to scientifically determine sustainable extraction limits and prevent the degradation of river ecosystems.

Significance of the Judgement

- Strengthens the scientific basis for mining clearances.
- Reinforces NGT's role in environmental governance.
- Ensures sustainable sand mining, preventing river ecosystem degradation.
- Sets a precedent that replenishment studies are non-negotiable in granting ECs.

Sand Mining

- **Sand mining** refers to the removal of sand (a natural resource) from its natural environment—primarily riverbeds, floodplains, beaches, and coastal/ marine ecosystems—for commercial, industrial, and construction purposes.
- **Why is Sand Mined?**
  - **Construction material:** Concrete, mortar, cement, roads, highways, and dams.
  - Land reclamation and coastal development projects.

- **Industrial uses:** Glass-making, foundry moulds, silicon chips.
- **Infrastructure growth:** Sand is the second most consumed natural resource on Earth after water.

Impacts of Sand Mining

- **Leads to Flooding:** Excessive sand mining can alter the river bed, force the river to change course, erode banks, and lead to flooding.
- **Harmful for Corals:** Disturbance of underwater and coastal sand causes turbidity in the water, which is harmful for organisms such as corals that need sunlight.
- **Fisheries Sector:** It also destroys fisheries, causing problems for people who rely on fishing for their livelihoods.
- **Impact on Water Table:** Sand acts like a sponge, which helps in recharging the water table; its progressive depletion in the river is accompanied by sinking water tables in the nearby areas, adversely impacting people's daily lives.

Regulation in India

- **Sand is a minor mineral,** as defined under section 3(e) of the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act 1957).
- **Sand mining** is regulated in terms of the MMDR Act and the Mineral Concession Rules framed by the concerned State Governments / Union Territories (UT).
  - It empowers the State Governments / U.T. Administrations to make rules for preventing illegal mining, transportation, and storage of minerals.
- The Ministry has also issued the **Sustainable Sand Mining Guidelines, 2016, and Enforcement and Monitoring Guidelines for Sand Mining 2020** to put in place an appropriate regulatory regime for sustainable sand mining and adoption of environmentally friendly management practices.
- **The extraction limit is recommended by the State Level Expert Appraisal Committee (SEAC)** after scrutinizing the sand mining proposal on a case-to-case basis.
- **In 2018, the Ministry** laid down the procedure for making a **District Survey Report for sand mining.**
  - The District Survey Report shall form the basis for application for environmental clearance, preparation of reports, and appraisal of projects, the Report shall be updated once every five years.

Conclusion

- The Supreme Court's ruling marks a significant step towards **balancing development with ecological sustainability.**
- By making replenishment studies and District Survey Reports mandatory, it ensures that s**and mining is guided by scientific assessment rather than arbitrary clearance.**
- This not only **safeguards riverine ecosystems and groundwater resources** but also strengthens institutional accountability through the NGT and State authorities.
- The judgment sets a **strong precedent for sustainable resource governance in India.**

Source: IE

COST OF DEALING WITH INVASIVE SPECIES

Context

- According to a recent study published in **Nature Ecology & Evolution**, invasive non-native plants and animals have inflicted more than **$2.2 trillion in damages worldwide** since 1960, and found that the true costs may be **16 times higher** than previously estimated.

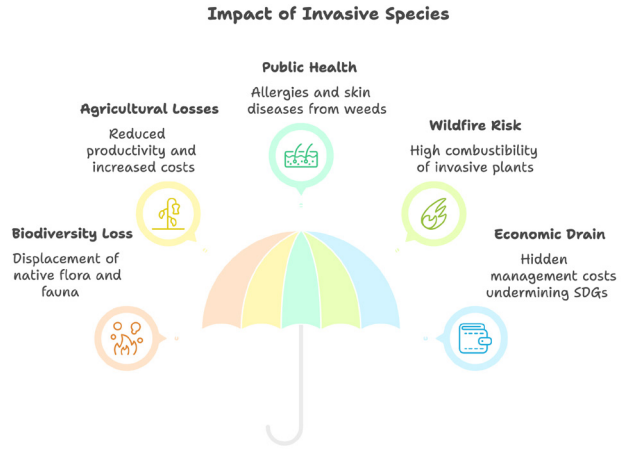
Invasive Alien Species (IAS)

- **Invasive Species** are non-native flora and fauna that disrupt local ecosystems, including the environment, economy, or human health.
- Globally, **plants were the most damaging invasive group**, causing $926.38 billion in costs, followed by:
  - **Arthropods**: $830.29 billion
  - **Mammals**: $263.35 billion
- Researchers emphasize that **trade and travel** are the **main vectors** for their spread.

Common invasive species in India

- Among the most costly to manage are **Japanese knotweed (Reynoutria japonica)** and **common lantana (Lantana camara)**.
- In India, the MoEFCC recognizes **over 154 invasive faunal species**, spanning terrestrial, freshwater, and marine ecosystems.
  - Invasive plants like Lantana camara and Senna spectabilis have colonized vast swathes of the Western Ghats, including critical tiger and elephant habitats.

- **Lantana alone** has invaded **over 40% of India's tiger habitats**, threatening prey availability and altering forest dynamics.



Why the Underreporting?

- Study points to several systemic issues:
  - Lack of centralized data systems;
  - Limited inter-agency coordination;
  - Language barriers in global databases;
  - Competing conservation priorities.

Global Policy Responses

- Several international agreements aim to curb biological invasions:
  - **Ballast Water Management Convention**: Prevents aquatic species spread via ships.
  - **Convention on Biological Diversity**: Obligates countries to prevent, control, or eradicate alien species threatening ecosystems.
- These frameworks highlight a growing recognition of invasive species as a **global ecological and economic threat**.

India's Efforts to Curb Biological Invasions

- **National Biodiversity Strategy and Action Plan (NBSAP):** It aligns with the **Kunming-Montreal Global Biodiversity Framework** and includes invasive species management as a key priority. It adopts a **'Whole-of-Government and Whole-of-Society'** approach, involving multiple union ministries and stakeholders. It emphasizes:
  - Restoration of degraded ecosystems;
  - Protection of terrestrial and marine areas;
  - Pollution control and invasive species mitigation;
  - Community participation in biodiversity governance.
- **Scientific Research and Documentation:** The Indian Council of Forestry Research and Education (ICFRE) published a comprehensive **Handbook on Invasive Species.**

What Needs to Change?

- To address this growing threat, India needs to:
  - Develop a national database for invasive species costs and management;
  - Invest in early detection and rapid response systems;
  - Promote interdisciplinary research and community engagement;
  - Integrate invasive species control into climate and biodiversity policies.

Source: TH

NEWS IN SHORT

KILAUEA VOLCANO

Context

- **Hawaii's Kilauea Volcano**, one of the **world's most active,** has started erupting again.

About Kilauea

- It is one of **six active volcanoes** in the Hawaiian Islands. It is a **shield volcano** and is known for **effusive lava flows** rather than explosive eruptions.
- It is located within the **Hawaii Volcanoes National Park**, alongside **Mauna Loa** (the largest volcano in the world).
- Although smaller than Mauna Loa, Kilauea is **more active**, erupting frequently since **1983**.

What is a Volcano?

- An opening/crack in Earth's crust through which magma, gases, and ash escape from the interior to the surface.

- **Can be classified as:**
  - **Active Volcano:** Erupts regularly (e.g., Kilauea, Barren Island).
  - **Dormant Volcano:** Inactive for long but can erupt again (e.g., Vesuvius in Italy).
  - **Extinct Volcano:** No eruption for thousands of years, unlikely to erupt (e.g., Deccan Traps in India).

Volcanoes in India

- **Active:** Barren Island (Andaman & Nicobar Islands) – India's only active volcano.
- **Dormant:** Narcondam Island (Andamans).
- **Extinct:** Deccan Plateau (remnant of massive volcanic activity ~65 million years ago).

Source: AIR

SHIPKI-LA

In News

- China has agreed in principle to resume trade through the **Shipki-La pass** in Himachal Pradesh's Kinnaur district

Shipki-La pass

- It is situated in Himachal Pradesh's Kinnaur district and the Sutlej River (known as Langqen Zangbo in Tibet) enters India through this pass.
- It is a historic trade route between India and Tibet, active since at least the 15th century and rooted in deep cultural ties symbolised by a traditional oath of continuity.
- However, trade through the pass ceased due to geopolitical tensions, beginning with the **1962 Sino-India war and later affected by the Doklam standoff and the COVID-19 pandemic.**

Source :TH

INDIA LAUNCHES RS. 25,000 CRORE EXPORT PROMOTION MISSION

Context

- The Commerce and Industry Ministry has designed the **Export Promotion Mission (EPM)** with a total outlay of **Rs. 25,000 crore (US$ 2.85 billion) for six years.**

Strategic Objectives Export Promotion Mission

- To mitigate risks from **tariffs, trade wars, and global demand** slowdown.
- To **diversify export markets** and the export basket, reducing overdependence on a few sectors and destinations.
- To enhance the **exportability of Indian products** through branding, compliance, and quality upgradation.
- To focus on small exporters, easing their access to finance and markets.

Two pillars of export support

- **Niryat Protsahan (Export Encouragement):** The overall allocation for this component is expected to be **Rs 10,000 crore.**
  - Components: Interest equalisation support of over **Rs. 5,000 crore**, Export factoring and export credit insurance, Collateral-free loans and innovative financing tools for small exporters, Six new credit support schemes under consideration.
- **Niryat Disha (export Direction):** The allocation for this component is **Rs 14,500 crore.** It includes multiple sub-schemes aimed at addressing quality, logistics, and global integration challenges.
  - **Export quality compliance:** Approx. Rs. 4,000 crore.
  - **Overseas market development:** Approx. Rs. 4,000 crore.
  - **Branding and international positioning of Indian products.**
  - Export warehousing and logistics support.
  - **Capacity building:** Integrating MSMEs into global value chains.

Source: FE

FAMINE IN GAZA

Context

- According to a new **Integrated Food Security Phase Classification (IPC) analysis**, More than half a million people in **Gaza are trapped in famine.**

What is the Integrated Food Security Phase Classification (IPC) ?

- IPC is an **independent body** funded by Western countries and widely recognised as the main global system for measuring the severity of hunger crises.
  - It was set up to sound the alarm so that famine and mass starvation could be prevented and to help organisations respond.
- At the global level, the IPC partnership includes **21 organizations** and intergovernmental institutions

- The IPC itself does not formally declare famine. It provides scientific analysis, which is reviewed by a Famine Review Committee (FRC) of independent experts. Governments or UN bodies issue the official declaration.

How famine is determined?

- The IPC system charts acute food insecurity on a **five-phase scale.** Its most **extreme warning is Phase 5,** which has two levels, **catastrophe and famine.**
- If the IPC or one of its partners finds that at least one area is in famine, a **famine review committee,** led by up to six experts, is activated.
- For an area to be classified as in famine, at least **20%** of people must be suffering **extreme food shortages**, with **one in three children** acutely malnourished and **two people out of every 10,000** dying daily from starvation or malnutrition and disease.

What are the Precedents?

- This is the fifth time in the past 14 years that a famine has been determined by the IPC, and the first time it has confirmed famine outside Africa.
  - **Somalia (2011):** Over 250,000 deaths.
  - **South Sudan (2017 & 2020):** Prolonged civil conflict and displacement.
  - **Sudan (2024):** War-induced collapse of food systems.
  - **Gaza (2025):** First famine outside Africa, amidst conflict and blockade.

Source: IE

NASA'S CHAPEA PROJECT

Context

- NASA has unveiled the **second Crew Health and Performance Exploration Analog (CHAPEA) habitat,** designed for a series of analogue missions simulating year-long stays on the surface of Mars.

About

- The mission consists of **four crew members living in the CHAPEA habitat,** an isolated 1,700 square foot, 3D-printed structure.
  - The **CHAPEA mission** is part of NASA's ongoing efforts to prepare for **future manned missions to Mars.**
- **Objective:** Study physical and psychological effects of long-duration space missions.
- **Activities:** Scientific tasks, growing vegetables, maintaining habitat, simulated "Marswalks."

Mars

- Mars is the **fourth planet** from the sun and has a **distinct rusty red appearance and two unusual moons.**
  - Phobos: ~6000 km above Mars; Deimos: ~20 000 km above Mars.
- Mars also has the largest volcanoes in the solar system, **Olympus Mons** being one of them.
- **Atmosphere:** The temperature on Mars ranges between **20 degrees Celsius and -153 degrees Celsius.**
  - The planet has a rocky surface with **canyons, volcanoes, dry lake beds, and craters, all covered in red dust.**
  - It has about **one-third the gravity of Earth** and the atmosphere is much thinner than Earth's, containing more than **95% carbon dioxide and less than 1% oxygen.**
- The planet turns on its axis **more slowly than Earth**, and being farther from the Sun, takes longer to revolve around the Sun.
  - A day on Mars is 24.6 hours and a year is 687 Earth days long.

Challenges in Mars Mission

- The biggest challenge is the **long duration of a Mars mission** because even a one-way trip would take **six to nine months**.
- **Other challenges include** logistics for life support, and maintaining supplies and crew health.
- **Mars's thin atmosphere** also makes it difficult to slow down a spacecraft for a safe and precise landing.
- **Given the distance**, communications from and to Earth could have as much as a 20-minute lag, which would be **too long in case of real-time help during emergencies.**

Source: TH

ISRO HOLDS AIR-DROP TEST FOR GAGANYAAN MISSION

Context

- ISRO has successfully accomplished the **first Integrated Air Drop Test (IADT-01)** for end to end demonstration of parachute-based deceleration system for **Gaganyaan missions.**

- The test marks a **critical milestone in validating safety mechanisms** to ensure the secure return of astronauts to Earth.

Gaganyaan

- **Gaganyaan is India's first human spaceflight mission**, undertaken by the Indian Space Research Organisation (ISRO).
- **Aim:** To demonstrate India's capability to send humans to space, ensure safe return, and establish long-term capacity for human space exploration.
- **Objectives:**
  - **Human Spaceflight:** Send a crew of 2–3 astronauts to low-earth orbit (LEO) at an altitude of ~400 km.
  - **Mission Duration**: Around 3 days in orbit before safe return to Earth.
- India plans its first crewed Gaganyaan flight in **2027**, followed by Chandrayaan-4 in 2028, a Venus mission, and the proposed Bharat Antariksh Station by 2035.

Source: AIR

INDIGENOUS INTEGRATED AIR DEFENCE WEAPON SYSTEM (IADWD)

Context

- India has successfully conducted the maiden flight-tests of the **Integrated Air Defence Weapon System (IADWS)** off the coast of Odisha.

What is the IADWS?

- The Integrated Air Defence Weapon System (IADWS) is a **multi-layered air defence system** developed indigenously. It integrates three advanced components:
  - **Quick Reaction Surface to Air Missile (QRSAM)**
  - **Very Short Range Air Defence System (VSHORADS)**
  - **Laser-based Directed Energy Weapon (DEW)**
- It is operated and coordinated through a **Centralised Command and Control Centre**, developed by the **Defence Research and Development Laboratory (DRDL), Hyderabad**.

Defence Layers

- **Quick Reaction Surface to Air Missile (QRSAM):** Range: 25–30 km.
  - **Role:** Engages fast-moving, high-altitude threats like fighter jets, helicopters, and cruise missiles at the outermost defence layer.
- **Very Short Range Air Defence System (VSHORADS):** Developed by Research Centre Imarat (RCI), Hyderabad.
  - A **fourth-generation MANPAD** for Army, Navy, and Air Force use.
  - Neutralises targets such as drones and helicopters in the **300 m–6 km range**.
  - Portable, miniaturised, and capable of engaging low-altitude threats.
- **Directed Energy Weapon (DEW):** Developed by Centre for High Energy Systems and Sciences (CHESS), Hyderabad.
  - Vehicle-mounted **Laser DEW MK-II(A)** demonstrated earlier this year, defeating UAVs and swarm drones.
  - Range: **less than 3 km**.
  - Places India among the few nations with operational directed energy weapon technology.

Strategic Significance

- IADWS strengthens India's **multi-layered air defence capability**, covering aerial threats within a 30 km radius — from high-speed jets to slow-moving drones. Key points of significance include:
  - **Indigenous technology**: All components, including command and control, are fully homegrown.
  - **Seamless integration**: Missiles and directed energy weapons operate in coordination.
  - **Reduced foreign dependence**: Enhances self-reliance in advanced defence systems.
  - **Future scope**: The successful test is seen as a step towards **Mission Sudarshan Chakra**, announced by Prime Minister Narendra Modi, aimed at developing a comprehensive national air defence shield.

Source: IE

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